

Remarks:

Reconsideration of the application is requested.

Claims 1, 2, 4, 7-11, 13, 16-17, 19, and 22 remain in the application. Claims 1, 2, 4, 7-11, 13, 16-17, 19, and 22 are subject to examination. Claims 1, 8 and 16 have been amended. Claims 3, 5, 6, 12, 14, 15, 18, 20 and 21 had been previously canceled to facilitate prosecution of the instant application.

In item 2 on page 2 of the above-identified Office action, claims 1, 2, 7-11, 16, 17 and 22 have been rejected as being fully anticipated by U.S. Patent No. 5,661,241 to Harth, III et al. (hereinafter Harth) under 35 U.S.C. § 102.

Claims 1, 8, and 16 of the instant application are directed to the measuring of layer thicknesses in cladding tubes for nuclear fuel. The Examiner's remark on page 4, penultimate line, to page 5, line 2, that the information "thin-walled" is missing from the claim language is noted. Claims 1, 8 and 16 have been amended with the features of claims 6, 15 and 21 respectively so that the wall of the tube is 1 mm or less.

In item 3 on pages 2 and 3 of the above-identified Office action, claims 1, 2, 6-11, 15-17 and 21-22 have been rejected as being obvious over U.S. Patent No. 5,661,241 to Harth, III

et al. (hereinafter Harth) in view of the article by Krautkrämer et al. entitled Ultrasonic Testing of Materials (hereinafter Krautkrämer) under 35 U.S.C. § 103.

The Examiner further asserts that the feature "metallurgically bonded cladding" is not present in the claim language. It is known to the person of average skill in the art that in cladding tubes for nuclear fuel with two or more layers formed of a zirconium alloy, the layers are metallurgically connected with each other. Furthermore, this also becomes clear when envisioning the production of such a double-layer cladding tube. Initially, a billet which is formed of an inner tube containing a first zirconium alloy and a second tube containing a second zirconium alloy which surrounds the first tube is extruded. The billet, which has a thickness of approximately 10 cm and a length of 30 cm, is then rolled out to its final diameter in a so-called Pilger method (see, for example, U.S. Patent No. 5,329,561, column 1, lines 47-59). The fact that the two layers are metallurgically connected with each other in this production process is obvious. U.S. Patent Nos. 5,329,561 and 5,225,148, which pertain to double-layer cladding tubes, are examples in which a metallurgical connection is present between the different layers.

The feature of the metallurgical connection of the different cladding tube layers for nuclear fuel is thus believed to be inherent.

Harth pertains to the measuring of the inner coating of a boiler 14, for example a steam boiler, whereby a high-frequency test head is coupled to the outside of the boiler by use of contact technology. The boilers thereby have a diameter of between 20 to 30 feet (see Harth, column 5, lines 24-27). The inner layer is a "non-welded" cladding layer, and therefore is not metallurgically connected with the base metal of the boiler. Furthermore, the layer thicknesses in question for a boiler or a comparable work piece are much larger than for a cladding tube for fuel. For the base metal the layer thickness is in a region of 13 mm and for the nickel layer in a region of 3 mm. In summary, Harth thus proposes a measuring method for boilers or similar objects, which have, on the one hand, much larger dimensions and layer thicknesses than cladding tubes for nuclear fuels and where the coating (nickel) is connected to the base metal in a non-metallurgical manner. What is furthermore different is that Harth pertains to two different metals, while in a cladding tube two almost identical zirconium alloys, the absorption of which differs only slightly, are connected with each other. For these reasons, a person of average skill in the art would not have used the method proposed by Harth for cladding tubes for

fuels. The Examiner's statement that the boiler mentioned in Harth is the same as a cladding tube is respectfully believed to be incorrect. This is because the text passage according to column 4, lines 2 and 3 pertains to the state of the art according to U.S. Patent Nos. 5,329,561 and 5,225,148, and not to the method proposed in Harth.

Krautkrämer generally pertains to the ultrasound measuring in the case of curved surfaces. Neither multi-layer cladding tubes for fuels are mentioned, nor is it discussed to determine the thickness of layers of such tubes containing a zirconium alloy as is generally used in cladding tubes for nuclear fuels. The problem which the person of average skill in the art faces when determining the layer thickness of such cladding tubes results from the fact that the individual layers formed of almost of the same material and only very weak echoes are received at the interfaces of layers which are in contact with each other. The person of average skill in the art will thus direct his attention to a measuring method which has the highest possible sensitivity. In this regard, the person of average skill in the art, however, gathers from Krautkrämer that with the use of test heads with planar coupling surface, for example for convexly curved surfaces, the disadvantage of a reduced sensitivity is to be accepted and that corrective measures can be taken by adapting the coupling surface to the work piece surface. The person of

average skill in the art dealing with the above problem thus obtains the suggestion from Krautkrämer to use a curved coupling surface instead of a planar surface.

Thus the motivation, hint or suggestion for combining Harth with Krautkrämer is not believed to be obvious.

In item 4 on pages 3 and 4 of the above-identified Office action, claims 4, 13, and 19 have been rejected as being obvious over U.S. Patent No. 5,661,241 to Harth, III et al. (hereinafter Harth) in view of Trulson et al. under 35 U.S.C. § 103. Claims 4, 13 and 19 ultimately depend on one of amended claims 1, 8 or 16. Since amended claims 1, 8 and 16 are believed to be allowable, claims 4, 13 and 19 are also believed to be allowable.

In item 5 on page 4 of the above-identified Office action, claims 4, 13, and 19 have been rejected as being obvious over Krautkrämer in view of Trulson et al. under 35 U.S.C. § 103. Claims 4, 13 and 19 ultimately depend on one of amended claims 1, 8 or 16. Since amended claims 1, 8 and 16 are believed to be allowable, claims 4, 13 and 19 are also believed to be allowable.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either

show or suggest the features of claims 1, 8 and 16. Claims 1, 8 and 16 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claims 1, 8 or 16.

In view of the foregoing, reconsideration and allowance of claims 1, 2, 4, 7-11, 13, 16-17, 19, and 22 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested, as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

If an extension of time for this paper is required, petition for extension is herewith made.


The extension fee for response within a period of 2 months pursuant to Section 1.136(a) in the amount of \$450.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any other fees that might be due with respect to

Sections 1.16 and 1.17 to the Deposit Account of Lerner and

Greenberg, P.A., No. 12-1099.

Respectfully submitted,

  
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For Applicant

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February 8, 2005

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